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Award Number: DAMD17-01-1-0527

TITLE: Managed Care Penetration and the Use of Screening Mammography by Uninsured Women

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REPORT DATE: June 2002

TYPE OF REPORT: Annual

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for Public Release;
Distribution Unlimited

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 074-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	June 2002	Annual (1 Jun 01 - 30 Jun 02)

4. TITLE AND SUBTITLE
Managed Care Penetration and the Use of Screening Mammography by Uninsured Women

5. FUNDING NUMBERS
DAMD17-01-1-0527

6. AUTHOR(S)
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8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution Unlimited

12b. DISTRIBUTION CODE

13. Abstract ***(Maximum 200 Words)*** *(abstract should contain no proprietary or confidential information)*
Between 1991 and 1997, the rate of mammography among uninsured women decreased in 30% of states. This decline may be due to the influx of managed care in many comunities, which has eroded the ability of uninsured women to receive primary care, reduced the availability of mammography facilities, and increased waiting times for mammography. In this study we propose to examine whether there is an association between managed care penetration and rates of mammography among uninsured women between 50 and 64 years of age. We will compare these rates to mammography rates for women aged 50-69 with private or public coverage, including Medicare. To examine these hypotheses, we are conducting a longitudinal study using data from the the Center for Disease Control and Prevention's (CDC's) Behavioral Risk Factor Surveillance System (BRFSS), InterStudy, and the Area Resource File (ARF) of the Bureau of Health Professions for the years 1997 to 2000. The results of our study may reveal opportunities for policymakers to intervene to reduce breast cancer morbidity and mortality among women, and prompt researchers to investigate the impact of other market factors on the use of mammography.

14. SUBJECT TERMS	15. NUMBER OF PAGES
mammography, managed care, uninsured	7
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	Unlimited

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20021114 265

Introduction

Between 1991 and 1997, the rate of mammography among uninsured women decreased in 30% of states. This decline may be due to the influx of managed care in many comunities, which has eroded the ability of uninsured women to receive primary care, reduced the availability of mammography facilities, and increased waiting times for mammography. In this study we propose to examine whether there is an association between managed care penetration and rates of mammography among uninsured women between 50 and 64 years of age. We will compare these rates to mammography rates for women aged 50-69 with private or public coverage, including Medicare. We hypothesize that rates of annual mammography among uninsured women will grow more slowly or decline in areas with high rather than low managed care penetration, and that changes in the rate of mammography among uninsured women in areas of high managed care penetration will be partially explained by reduced receipt of primary care and access to mammography facilities. To examine these hypotheses, we are conducting a longitudinal study using data from the the Center for Disease Control and Prevention's (CDC's) Behavioral Risk Factor Surveillance System (BRFSS), InterStudy, and the Area Resource File (ARF) of the Bureau of Health Professions for the years 1997 to 2000. We will use logistic models in a generalized estimating equation framework to determine whether increasing managed care penetration may explain the declining use of screening mammography among uninsured women.

Body

Our work on this project has been significantly delayed by our difficulty in obtaining data from the Food and Drug Administration (FDA) on the location of certified mammography facilities for our study period of 1992 through 1998. These are publicly available data that were readily available according to FDA officials at the time of our grant application. However, when we tried to obtain the data in September of 2001, we were unable to purchase the data or to locate them through the FDA staff because these data were "historical" in nature and thus, FDA did not keep older copies of the data. After many inquiries, we filed a Freedom of Information Act Request to obtain historical data. The data were eventually located by FDA staff using back-up files. We received data for years 1997-2000 in late March.

The lack of data availability from our original study period has forced us to change the study period slightly (to 1997 through 2000). This change will make the time period of our research more current, but has required us to update our other data sources (data on managed care penetration and data from the Behavioral Risk Factor Surveillance System), delaying our work on this project further. The delay in obtaining the data also affected the availability of the programmer for work on this project. We now have updated our study design to incorporate the changed study period, we have collected data on mammography facilities, use of mammography, and managed care penetration at the level of metropolitan statistical areas (MSAs) for the period 1997 through 2000, and the programmer has begun cleaning the data files for our analysis. The remaining data tasks include: clean BRFSS data between 1997 and 2000 to make all variables comparable across years, clean and recode the FDA mammography facility data to match the location of providers to counties in the BRFSS, obtain county level managed care penetration data for 1998 through 2000 from Interstudy, clean area level variables from ARF for 1997

through 2000. Because we did not have all the data we needed in the first year, nearly the entire budget for this project is still available for use in the second year of the project.

Since the programmer has begun cleaning and merging the BRFSS and managed care data, we have been able to obtain some initial tables of the data from the BRFSS in 1997 and 2000. We have isolated all women aged 50 to 64 residing in MSAs with information on insurance status and mammography receipt. For these two years, this yields a sample of 21,422 women. Of these, 2,178 are uninsured. We also formed a sample of 5,545 women aged 65-69 enrolled in Medicare. These sample sizes should allow us to obtain relatively precise estimates of differences in rates of mammography by managed care penetration. When we obtain county level managed care penetration data, we will be able to use a larger sample including women who do not reside in an MSA.

Tables 1 and 2 show how mammography receipt varies with managed care penetration. These tables are highly preliminary in nature and thus may change as our data cleaning efforts progress. Overall, mammography receipt seems to rise with managed care penetration in both 1997 and 2000. Uninsured women are almost 20 percent less likely to receive mammography than privately insured women. In high managed care areas in 1997, they are 34 percent less likely to receive mammography than privately insured women. In 1997, the likelihood of receiving mammography drops as managed care penetration rises. However, this trend seems to be reversed in the year 2000 data. All differences across groups (of managed care penetration) are significant at the .05 significance level using an F-test.

Table 1: Rate of mammography receipt by managed care penetration in woman's MSA, 1997

Overall	Managed care penetration				
	<10%	10-20	20-30	30-40	40+
Women aged 50-54 (n=3626)	76.7	77.6	80.5	80.8	81.1
Women aged 55-59 (n=2264)	71.2	74.3	79.8	80.9	83.7
Women aged 60-64 (n=1883)	77.3	79.5	79.3	78.0	78.0
Uninsured	Managed care penetration				
	<10%	10-20	20-30	30-40	40+
Women aged 50-54 (n=326)	61.2	55.6	54.6	64.3	49.2
Women aged 55-59 (n=302)	44.2	50.0	54.9	46.4	60.9
Women aged 60-64 (n=269)	62.8	56.6	62.3	58.5	47.3
Privately insured	Managed care penetration				
	<10%	10-20	20-30	30-40	40+
Women aged 50-54 (n=2991)	79.5	79.4	84.0	83.2	84.5
Women aged 55-59 (n=2206)	77.7	79.3	83.0	84.8	87.1
Women aged 60-64 (n=1691)	79.3	83.3	83.9	82.5	85.6
Medicare	Managed care penetration				
	<10%	10-20	20-30	30-40	40+
(n=2442)	75.5	78.9	79.3	78.4	82.7

Table 2: Rate of mammography receipt by managed care penetration in woman's MSA, 2000

Overall	Managed care penetration				
	<10%	10-20	20-30	30-40	40+
Women aged 50-54 (n=5678)	78.5	80.8	82.1	82.7	86.6
Women aged 55-59 (n=4380)	80.3	82.0	82.3	85.2	86.4
Women aged 60-64 (n=3591)	72.2	78.3	83.3	84.7	83.8
Uninsured	Managed care penetration				
	<10%	10-20	20-30	30-40	40+
Women aged 50-54 (n=536)	48.6	52.2	55.9	53.1	66.0
Women aged 55-59 (n=368)	49.1	55.4	50.0	69.1	67.4
Women aged 60-64 (n=377)	47.2	53.4	58.4	60.6	60.4
Privately insured	Managed care penetration				
	<10%	10-20	20-30	30-40	40+
Women aged 50-54 (n=4500)	84.7	84.4	85.6	85.9	89.3
Women aged 55-59 (n=3334)	84.9	86.8	85.5	87.2	88.2
Women aged 60-64 (n=2469)	84.9	84.2	86.7	87.2	87.8
Medicare, aged 65-69	Managed care penetration				
	<10%	10-20	20-30	30-40	40+
(n=3103)	80.4	81.2	81.3	84.7	86.1

Future analyses will incorporate all years of data between 1997 and 2000, will use a logistic regression framework to control for potential confounding variables, and will compare results using both MSA- and county-level managed care penetration. We will also work to understand the surprising change between 1997 and 2000 in the relationship between managed care penetration and mammography among the uninsured.

Key Research Accomplishments

Because we are in the process of cleaning the data for analyses, all key research accomplishments pertain to the task of collecting and cleaning the data.

- Collected data on mammography facility location from 1997 through 2000
- Collected BRFS data on mammography use, demographics, and other pertinent variables
- Formed sample of women aged 50-69 using cleaned BRFS data
- Collected managed care penetration data from Interstudy (at the MSA level) for 1997 through 2000

Reportable Outcomes

Because we are in the process of cleaning the data for analyses, there are not yet key reportable outcomes.

Conclusions

The results of our study may reveal opportunities for policymakers to intervene to reduce breast cancer morbidity and mortality among women, and prompt researchers to investigate the impact of other market factors on the use of mammography.